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FIGURES

8.12 HAZARDOUS MATERIALS HANDLING

This section discusses the hazardous materials to be used in conjunction with the construction and operation of the proposed Colusa Power Plant. The proposed facility and ancillary systems are designed to minimize the use of hazardous materials. Storage facilities and handling equipment for hazardous materials have been designed so that in the unlikely event of an accidental release of a hazardous material, the potential impacts will be below designated thresholds of significance.

To minimize the risks and offsite consequences from hazardous materials, a federal program was established in 1990 as described in Section 112 (r) of the Clean Air Act. The California Office of Emergency Services established the California Accidental Release Prevention (Cal-ARP) Program to prevent accidental releases of regulated substances. The Cal-ARP Program specifies the regulated substances, oversees the federal requirements, and determines the requirements for the preparation of a Risk Management Plan (RMP) and offsite accidental release consequence analysis.

The Cal-ARP Program defines three program levels with differing requirements depending upon the complexity, accident history, and potential impact of releases of regulated substances. The program requires that the owner or operator coordinate closely with the local administering agency to determine the appropriate level of documentation required for an RMP.

The quantity of aqueous ammonia stored on site will be greater than the Federal Threshold Quantity; therefore an offsite consequence analysis is required. In addition, at least a Program 1 RMP must be completed. To fulfill the Program 1 requirements, the following actions are required:

- Analyze the worst-case release scenario and include it in the RMP.
- Document that the nearest public receptor is beyond the distance to a toxic or flammable endpoint.
- Document any hazardous material accidents in the past 5 years.
- Ensure that response actions have been coordinated with local emergency planning and response agencies.
- Certify in the RMP that “no additional measures are necessary to prevent offsite impacts from accidental releases.”

Additional requirements will apply if the facility triggers a Program 2 or Program 3 RMP such as:

- Describe the site’s accidental release prevention program and chemical specific prevention steps. (Ensure that response actions have been coordinated with local emergency planning and response agencies.)
- Describe the site’s safety program.
- Perform a hazard review and describe the site’s hazard review program.
- Describe the site’s operating procedures.
- Describe the site’s training program.
- Describe the site’s maintenance program.
- Describe the site’s compliance audits program.

- Describe the site's incident investigation program.

Beneficial design aspects of the proposed project that will minimize impacts below a level of significance include the following:

- Spill containment walls that surround the aqueous ammonia storage tank.
- Spill containment for the tanker truck unloading area.

8.12.1 Affected Environment

The CPP will be located approximately 4 miles west of I-5 in Colusa County, California. The site is currently undeveloped agricultural land used for grazing cattle. Sparse residences are located in the surrounding area. The location of the proposed CPP is shown in Figure 3.2-1.

No sensitive receptors (schools, hospitals, daycare facilities and long-term health care facilities) are within a 3-mile radius of the CPP, therefore a table of sensitive receptors is not required. The nearest residence is a farm situated about 1.7 miles southeast of the plant site. The nearest public receptor is the PG&E compressor station, located immediately east of the proposed plant site.

The CPP site is not in a floodplain. Therefore, the ammonia storage facility does not need to be designed to accommodate possible flooding.

The CPP site is located in Seismic Risk Zone 3. Construction and design will conform to the 1997 Uniform Building Code, the 1998 California Building Code, and the Colusa County Building Code.

8.12.2 Environmental Consequences

The criteria used to determine the significance of potential impacts from hazardous materials used at the CPP were based on the Environmental Checklist Form of the CEQA Guidelines and on standards and thresholds adopted by the relevant agencies involved with this AFC. Under CEQA Guidelines, an impact may be considered significant if the project would:

- Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials.

- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of a hazardous material into the environment.

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school.

- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would create a significant hazard to the public or the environment.

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The safe transport, use and disposal of hazardous materials by Reliant will avoid or minimize significant impacts from the potential release of hazardous materials. Potential impacts from hypothetical worst-case accidental release of ammonia shown in Section 8.12.2.2.2 have been demonstrated to have a low probability of impact, hence the worst-case release of ammonia at CPP should be considered to be negligible.

An accidental release can only occur if hazardous materials are handled improperly or if a catastrophic event occurs. Although the probability of such events occurring is extremely low, passive design features have been included in the project design to minimize potential impacts in the event of a release. Hence, additional mitigation measures are not required (see Section 8.12.5, Mitigation Measures).

The offsite consequence analysis evaluates potential offsite impacts in terms of the predicted maximum ground-level concentration of each hazardous material that qualifies as a state-regulated substance under the Cal-ARP Program or a federal-regulated substance under Section 112(r) of the Clean Air Act. For the proposed project, aqueous ammonia is the only substance that will be stored and used on site in sufficient quantity to qualify as a regulated substance in both programs. Thus, an offsite consequence analysis will be required for aqueous ammonia. The model simulations of the atmospheric dispersion of ammonia during the worst-case release scenarios will partially determine which RMP Program level will be required.

In the analysis of potential offsite consequences of the hypothesized worst-case accidental releases of ammonia, a significant impact would occur if a concentration of ammonia were to equal or exceed the toxic endpoint at the distance of the nearest public receptor. The toxic endpoint is designated by the U.S. EPA in 40 CFR Part 68 Appendix A. This concentration is also the Emergency Response Planning Guideline Level 2 (ERPG-2) concentration.

A local Colusa County agency will be designated for the development of the RMP for the aqueous ammonia to be used by the proposed project. The CEC is the lead agency for the project's AFC, which includes this offsite consequence analysis for potential aqueous ammonia releases from the project.

8.12.2.1 Construction Phase

Hazardous materials used during the construction phase would be limited to small volumes of flushing and cleaning fluids (phosphate or nitrate solutions), cleaning solvent, paint waste, antifreeze and pesticides. The construction contractor would be considered the generator of hazardous construction waste and would be responsible for proper handling of hazardous wastes in accordance with all applicable federal, state, and local laws and regulations, including licensing, personnel training, accumulation limits and time, reporting and record keeping. Any hazardous wastes generated during construction would be collected in hazardous waste accumulation containers near the point of generation and moved daily to the contractor's 90-day hazardous waste storage area located on the site. The accumulated waste would be subsequently delivered to an authorized waste management facility.

Material Safety Data Sheets for each onsite chemical would be kept on site and construction employees would be aware of their location and content.

The most probable accidents might occur from small-scale spills during cleaning or use of other materials in the storage areas. No additional measures beyond those described in this section are needed to reduce potential impacts to a less-than-significant level.

8.12.2.2 Operational Phase

8.12.2.2.1 Anticipated Hazardous Materials

A number of hazardous materials would be stored and used on site during the operation of the new combined-cycle gas turbines and SCR systems at the CPP. Table 8.12-1 lists the hazardous materials that would be used or stored on site as a result of the proposed project. Information provided in this table for each material includes the maximum quantity stored on site, Chemical Abstract Service (CAS) number, usage, location, nature of the hazard, and state/federal threshold quantities. Figure 8.12-1 shows the locations at which the listed hazardous materials would be stored on the CPP site.

Emergency response policies and procedures would be outlined in a Business Plan/Contingency Plan that would be prepared prior to commencement of project operations. This plan would describe the necessary actions to be taken by facility personnel in the event of a hazardous materials release to the air, soil, or surface waters in the plant vicinity. These procedures would include a notification checklist, with contact information for CPP qualified individuals, emergency response agencies, regulatory agencies, police, fire, hospital, and ambulance services.

Waste lubricating materials would be periodically generated during the operation and maintenance of the generating units. These materials would be collected and stored in appropriately designed and labeled storage containers. Waste lubricants would be recycled by an approved contractor in compliance with applicable regulations.

Herbicides, pesticides, and algaecides would be stored in small quantities within a suitable containment structure. The immediate area around these chemicals will be appropriately labeled. The storage of such chemicals on site would be minimized. In the unlikely event that any of these chemicals must be disposed of, such disposal would be conducted in compliance with all local, state, and federal disposal and handling regulations.

Combustion exhaust catalysts would be used as part of the air quality control systems associated with the new generating units. These catalyst materials, which contain vanadium and other toxic materials, are expected to last approximately three years. The manufacturer would recycle spent catalysts, if possible. If necessary, these materials would be disposed in an appropriate manner at an approved Class I landfill.

Solvents may be used for parts cleaning and other maintenance activities. The use of solvents on site would be minimized. All solvents would be stored in labeled areas in appropriate containers with secondary containment. Spent solvents would be recycled, if practical, or would be disposed of in an appropriate manner.

Wastewater resulting from periodic cleaning of compressors and HRSGs may contain elevated concentrations of heavy metals. All such cleaning wastewater would be collected and routed to the zero liquid discharge system, as described in Section 3.4.7.1.

Curbs, berms, and concrete pits would be used where accidental releases of hazardous and acutely hazardous materials could occur. All containment areas would be constructed in accordance with the applicable laws, ordinances, regulations, and standards. Containment areas would be drained to appropriate collection areas or neutralization tanks for recycling or offsite disposal. Traffic barriers would protect piping and tanks from potential traffic hazards.

To minimize impacts from accidental releases, workers would be trained in methods for safe handling of hazardous materials, use of response equipment, procedures for mitigation of a release, and coordination with local emergency response organizations. More importantly, to avoid or minimize impacts from the accidental releases of hazardous materials, non-hazardous or less hazardous materials would be used where possible, or engineering controls would be implemented. For example, aqueous ammonia was selected for the SCR system over anhydrous ammonia, because it is less hazardous.

The most probable accidents involving hazardous materials may include small-scale spills of waste oil or other chemicals from product or satellite storage areas. To avoid potential impacts all spills would be cleaned up immediately.

The only acutely hazardous material that would be stored on site is aqueous ammonia. Aqueous ammonia would be used in the selective catalytic reduction process to reduce nitrogen oxide compounds from the exhaust of the fuel combustion in the gas turbine and heat recovery steam generator units. Figure 8.12-1 shows the proposed location of the ammonia storage facility on the site plan.

8.12.2.2.2 Offsite Consequence Analysis

Aqueous ammonia would be the only hazardous substance present in sufficient quantity to be a state and federal regulated substance subject to the requirements of the Cal-ARP program. Aqueous ammonia would be used in the SCR system to reduce NO_X emissions from the generating units. The 29.4 percent aqueous ammonia solution would be stored in one aboveground storage tank holding a maximum of 20,000 gallons.

This section outlines the contents of an offsite consequence analysis to evaluate potential acute public health impacts from an accidental release of aqueous ammonia. Details of the calculations for this analysis are included below under Model Parameters.

The offsite consequence analysis was performed for two hypothetical accidental release scenarios: worst-case, and alternative. The U.S. EPA has specified (40CFR §68.3) that the worst-case release scenario must be “the release of the largest quantity of a regulated substance from a vessel or process line failure that results in the greatest distance to an endpoint.” The alternative scenario is considered to be “more realistic,” while the worst-case scenario is so conservative as to be almost impossible. However the probability of the alternative scenario actually happening is also extremely low.

For each scenario, distances to specified concentrations of ammonia were estimated through calculation of emission rates and use of a computer model to predict airborne dispersion and resulting ground-level concentrations. If a specified “level of concern” concentration were predicted to reach off site, then potential short-term health effects would be evaluated.

Four levels of concern are used to evaluate public health impacts associated with the hypothetical release of aqueous ammonia:

- Lethal. The lethal concentration is 2,000 parts per million by volume (ppmv) averaged over 30 minutes.

- Immediately Dangerous to Life and Health (IDLH). The IDLH concentration is 300 ppmv, averaged over 30 minutes (National Institute of Occupational Safety and Health [NIOSH], 1997). This concentration was chosen by the NIOSH to ensure that workers can escape without injury or irreversible health effects from an IDLH exposure. Exposure to ammonia at or above the IDLH poses a threat of death or immediate or delayed permanent adverse health effects or prevents escape from the impacted environment.

- Emergency Response Planning Guideline Level 2 (ERPG-2) (American Industrial Hygiene Association (AIHA)). The ERPG-2 concentration is 200 ppmv averaged over 1 hour. ERPG-2 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual’s ability to take protective action.

- Short-Term Public Emergency Limit (STPEL). The STPEL is a concentration set by the National Research Council at 75 ppmv averaged over 30 minutes. The CEC uses this concentration as a screening guideline to determine the potential for significant impact.

Exposure above this level poses significant risk of adverse health impacts on sensitive members of the general public.

The potential offsite impact of an accidental release of ammonia is considered to be less than significant if the STPEL concentration does not reach a public receptor. If concentrations at the ERPG-2 level do not extend off site, significant concentrations cannot reach any public receptors, hence a Program 1 RMP is most likely appropriate and the impact is considered to be less than significant. If concentrations greater than the ERPG-2 level are determined to be off site, a Program 2 RMP must be considered.

The offsite consequence analysis includes four components. The first is to describe the scenario, including passive features designed to minimize emissions, in enough detail to allow quantitative analysis. The second component of the offsite consequence analysis is to estimate emission rates associated with each scenario. The third component is to use atmospheric dispersion modeling to predict the maximum distances to the levels of concern in each scenario. The fourth component assesses the potential degree and extent of offsite consequences of the concentrations computed by the dispersion modeling.

The following subsections describe: (1) the assumptions used to characterize the worst-case release scenario; (2) the assumptions used to characterize the alternative release scenario; (3) the development of input parameters for the modeling analyses of these scenarios; (4) the selected atmospheric dispersion modeling methodology; and (5) the results of the modeling analysis, including an exposure assessment for potential receptors in the vicinity of the CPP.

Worst-Case Release Scenario

Potential accidental releases of aqueous ammonia at the CPP could involve spills from a storage tank, spills during the unloading of a tanker truck to a storage tank, or the escape of ammonia during delivery from the storage tanks to the SCR system.

Emergency systems have been designed to stop the flow of ammonia during the transfer from the storage tanks to the SCR system if an escape were detected. Hence, the potential release quantity of ammonia would be much smaller than from the rupture of a tank or from a spill associated with an unloading operation. Accordingly, only the latter two scenarios were selected for calculation in this offsite consequence analysis.

The Risk Management Program guidance developed by the U.S. EPA requires that the worst-case release be the release of the largest quantity of a regulated substance from a vessel or process line failure. At the CPP, the hypothetical worst-case accidental release of ammonia examined is the failure or spill from a large tanker truck, releasing as much as 9,000 gallons instantly. The circumstances under which this scenario was assumed to occur are so conservative as to be virtually impossible.

A 1,125-square-foot containment area, would surround the tanker truck unloading area (Figure 3.5-6). The containment area would be designed to hold the entire contents of a 9,000-gallon tanker truck, plus the maximum rainfall recorded in 24 hours in the past 25 years (3.5 inches, WRCC 1948-2000). The above passive mitigation systems would limit the volatilization of an accidental aqueous ammonia release to the atmosphere.

The release rate of the ammonia is estimated as the rate of evaporation from the exposed pool of ammonia.

Alternative Release Scenario

The alternative scenario is considered to be a "more realistic" accidental release event compared with the extremely conservative worst-case scenario. However, the probability of the alternative scenario actually occurring is also extremely low. The alternative scenario would involve a spill of aqueous ammonia in the tank containment area, surrounded by a wall 2 feet high, possibly from the failure of the 20,000-gallon tank. This 2,640-square-foot containment area would be covered with plastic balls. The balls would reduce the surface area of an ammonia spill significantly, making the effective surface area no more than 565 square feet. The emission rate of ammonia is determined from the area of ammonia exposed to the atmosphere. The plastic balls in the containment area would limit the volatilization of ammonia.

Model Parameters

The calculations to determine the emission rate of ammonia vapor from an aqueous solution used the following equation, as recommended by the U.S. EPA in the *RMP Guidance for Offsite Consequence Analysis* (1999):

$$QR = \frac{0.284U^{0.78}MW^{2/3}A \times VP}{82.05T} \qquad \text{(Equation 8.12-1)}$$

where QR = emission rate of ammonia (pounds minute^{-1})
U = wind speed (meters per second)
MW = molecular weight of ammonia (grams per gram-mole)
A = surface area of spilled liquid pool (square feet)
VP = vapor pressure of ammonia above solution (millimeters of mercury)
T = temperature of liquid (degrees Kelvin)

This equation determines the emission rate of the ammonia alone; the evaporation rate of the water in the solution is ignored. The emission rate per area required for the selected dispersion model was calculated using the following equation:

$$E = \frac{QR}{A} \qquad \text{(Equation 8.12-2)}$$

where E = emission rate of ammonia (grams second^{-1} meter^{-2})
QR = emission rate of ammonia (grams second^{-1})
A = surface area of spilled liquid pool (square meters)

The surface area of the spilled pool used in Equations 8.12-1 and 8.12-2 is the area contained in the tanker truck unloading area for the worst-case scenario, and the area inside the tank containment area that is exposed to the atmosphere for the alternative scenario.

The wind speed used in Equation 8.12-1 is taken from Cal-ARP RMP guidance to be 1.5 m/s for the worst-case scenario and 3.0 m/s for the alternative scenario. Low wind speed results in a low volatilization rate as can be seen in Equation 8.12-1, but also results in a low rate of dispersion of the vapor as it is carried downwind.

The temperature of the released aqueous ammonia is assumed to be 9°F warmer than the air temperature to compensate for the maximum potential increase of temperature within the tanks. The Cal-ARP guidance requires the maximum air temperature observed on site in the previous three years; however, to be conservative the entire period of record (1948-2000) was used. The maximum temperature (111°F observed during 1978) was used for the worst-case scenario modeling (WRCC, 1948-2000). The normal air temperature of 60.5°F (observed during 1948-2000) was used in the alternative scenario modeling as per the Cal-ARP guidance requirements (WRCC, 1948-2000).

Atmospheric stability is an important meteorological parameter used in modeling the dispersion of the ammonia vapor that vaporizes from the liquid. The worst-case scenario requires stability class F, which is the most stable classification. In a stable atmosphere there is little turbulent motion, hence very little mixing occurs, so the ammonia concentration would remain high as the vapor is carried downwind.

The combination of the maximum observed temperature and extreme atmospheric stability that was assumed for the worst-case modeling scenario is so conservative that it never occurs. Maximum temperature occurs during the afternoon when the air is unstable (stability class A). In contrast, F stability occurs during nighttime or early morning before sunrise. Atmospheric stability class D (neutral stability) is used in the alternative scenario.

Table 8.12-2 shows the parameters used to model the ammonia dispersion for the worst-case and alternative release scenarios.

Modeling Methodology

To examine the impacts from a hypothetical spill of aqueous ammonia, the U.S. EPA-approved atmospheric dispersion model SCREEN3 was employed. SCREEN3 is a Gaussian plume model that incorporates continuous source and meteorological parameters.

An accidental aqueous ammonia release would pool in either the tanker truck unloading containment area or in the storage tank containment area where ammonia gas would evaporate. The ammonia gas is lighter than air — it has a molecular weight of 17.03 g/g•mole, whereas air has a molecular weight of about 29 g/g•mole. For the ammonia release scenarios examined, a dense gas model, such as SLAB or DEGADIS, would be inappropriate. Only one meteorological condition, a single stability class and wind speed, needs to be examined per scenario. The greatest distance to the toxic endpoint must be determined regardless of wind direction; hence, SCREEN3 is an appropriate model for the required analysis.

In the area source mode of SCREEN3, the source is represented by a rectangular area. In the alternative scenario, all of the small areas not occupied by the balls were combined to create one large source.

Modeling Results

It has been assumed that there is an equal probability of the ammonia dispersing in any direction. Thus, the model results in Figures 8.12-2 and 8.12-3 are shown as circles of equal predicted ammonia concentration around the source. The circles represent the distance to each "level of concern" concentration used as public health effects thresholds. The following table summarizes the modeling results:

Scenario	Nearest Public Receptor (PG&E Compressor Station)	Nearest Residence
Worst Case Concentration (Tanker truck spill into containment area 75 feet × 15 feet)	1,231 ppm	38 ppm
Alternative Concentration (Storage tank spill in 66 feet × 40 feet containment area)	100 ppm	3 ppm
Distance from Ammonia storage facility	1,025 feet	9,000 feet (1.7 miles)

Only at the PG&E Compressor Station in the worst-case scenario does the toxic endpoint concentration exceed the 200 ppm (ERPG-2) value. The closest public receptor to the facility is the PG&E Compressor Station. There are no other public receptors between the PG&E station and a residence 1.7 miles away from the facility. In the worst-case scenario, the concentration of ammonia surpasses both the ERPG-2 and IDLH levels at the nearest public receptor. However, the probability of such an accident occurring, combined with the correct meteorology to bring the ammonia emissions toward the PG&E Compressor Station, are so small that they may be considered negligible.

Frank P. Lees, Emeritus Professor of Chemical Engineering at Loughborough University, describes the probability of accidental release of various liquefied gases under pressure in his book: *Loss Prevention in the Process Industry* (1980). According to this document, the probability of a release of pressurized liquefied hydrogen fluoride is 1:10,000. Although this figure does not explicitly describe a release of aqueous ammonia, it may be argued that a release of non-pressurized aqueous ammonia is no more likely than a release of pressurized hydrogen fluoride. According to the meteorological data collected at the Maxwell station, approximately 5 miles from the proposed CPP site, only 7.75 percent of all measurements taken in two years show the winds blowing toward the PG&E Compressor Station (WeatherNews, 1996, 1999). Therefore the probability of the tank failing and the meteorology being favorable for carrying emissions toward the PG&E Compressor Station occurring are 1:129,032.

An industry standard recommended by Rick Tyler of the CEC prescribes that if an accident which impacts less than 10 people has a probability of 1:100,000 or less, the risk is considered negligible. At no time should there be more than 10 people working at the PG&E Compressor Station. Therefore, because of the low probability of this type of failure and the chance that the wind is blowing towards the compressor station coupled with the small number of people working at the PG&E Compressor Station, the risk of this type of failure should be considered negligible.

The nearest residence to the CPP, 1.7 miles southeast, is beyond the predicted distance to the STEPL, hence the potential impacts to the resident would be less than significant.

This facility would be required to conduct a Cal-ARP Program 2 analysis because it would not meet toxic endpoint requirements prescribed by Program 1. A Program 3 analysis would not be required because:

- The power generation industry is not specifically required to conduct a Program 3 analysis.
- The process is not subject to OSHA PSM because the concentration of ammonia is less than 44 percent.

No probable impacts are expected to occur at offsite receptors from the worst-case or alternative release scenarios, due to the design features of the proposed project which reduce the likelihood and potential consequences of accidental ammonia releases. Workers at the CPP would be trained to avoid and respond to accidental releases of hazardous materials, including aqueous ammonia. Hence, proposed project design and worker training would limit the safety hazard due to an accidental ammonia release to an acceptable level.

8.12.3 Fire and Explosion Risk

Two highly flammable substances, hydrogen and natural gas, would be used at CPP. Hydrogen gas would be on site in maximum quantities of 24,000 standard cubic feet.

Natural gas would be used exclusively as the fuel for this facility, and would be provided by means of a new natural gas pipeline. The pipeline would be buried except for small essential portions that would be above ground at the pressure metering station, the HRSG duct burners, and gas turbine generators. Keeping the pipeline underground reduces the risk of the line being struck by a vehicle. In addition, a relief valve would be provided on the line to prevent against breakage due to overpressure. Because of these passive mitigation measures, the potential impacts presented by the use of the natural gas pipeline are less than significant.

The risk of a fire or explosion on site would continue to be reduced through adherence to applicable codes and the development and implementation of effective safety management practices.

8.12.4 Cumulative Impacts

The hypothetical accidental releases of aqueous ammonia involved with the proposed project is described in the offsite consequence analysis, Section 8.12.2.2.2. The PG&E Compressor Station immediately to the east of CPP is the only nearby industrial site that could contribute to potential impacts from hazardous materials. Only a natural disaster such as a major earthquake could cause simultaneous accidental releases at both facilities. Nominal quantities of oils, cleaners, gases, and other hazardous materials are stored at the PG&E Compressor Station (Colusa County Office of Emergency Services). The majority of these materials are stored inside buildings, which would provide containment in the event of a release. The risk of a significant hazardous material release from the PG&E Compressor Station is unlikely enough to be considered negligible.

It was determined in this analysis that no probable offsite impacts would occur from potential aqueous ammonia releases at CPP. Due to the negligible risk of a release from the PG&E Compressor Station, there is virtually no potential for hazardous materials to accumulate offsite.

8.12.5 Mitigation Measures

The passive mitigation features included in the project design are the concrete containment area around the aqueous ammonia tank, and the containment area around the tanker truck unloading facilities. These passive design features will reduce potential offsite impacts in the event of an accidental ammonia release to a less-than-significant level; therefore, additional mitigation measures will not be required.

8.12.6 Laws, Ordinances, Regulations, and Standards

A summary of applicable LORS related to hazardous material handling is provided in Table 8.12-3. The proposed project will be in compliance with applicable LORS during construction and operation of the proposed facilities, because the following will be accomplished before aqueous ammonia will be stored or used at the CPP:

- Workers handling aqueous ammonia for the proposed project will be thoroughly trained.
- The RMP will be prepared by Reliant.
- The RMP will be approved by the appropriate local designated agency.

Emergency response procedures will be coordinated between facility personnel and local emergency planning and response organizations.

8.12.7 Involved Agencies and Agency Contacts

Issue	Agency/Address	Contact/Title	Telephone
Possible contact for Risk Management Plans	Colusa County Department of Environmental Health 251 E. Webster Street Colusa, CA 95932	Jaime Favila, Director	(530) 458-0397
Hazardous Materials Business Plans	Colusa County Office of Emergency Services 929 Bridge St. Colusa, CA 95932	Doug Turner, OES Coordinator Janice Bell, OES Technician	(530) 458-0230 (530) 458-0218
Risk Management Plans	State Department of Toxic Substances Control, State Regulatory Programs Division 1001 I Street Sacramento, CA 95814	Natalie Champ, Exec. Assistant Sonia Low, Supervising Hazardous Materials Scientist Watson Gin, Deputy Director	(916) 322-7527 (916) 323-9757 (916) 324-7193
Administering agencies for Colusa County	California Office of Emergency Services P.O. Box 419047 2800 Meadow View Road, Sacramento, CA 95832	John Paine, Senior Emergency Services Coordinator Steve Demellow, Program Manager I	(916) 464-3279 (916) 464-3281
CCSD Contacts MVFD for Response	Maxwell Volunteer Fire Department (MVFD) 231 Oak Street Maxwell, CA 95955	David Wells, Fire Chief	(530) 438-2320
Protect workers by meeting the requirements for equipment to store and handle hazardous materials.	Cal-OSHA 1515 Clay St. Suite 1103 Oakland, CA 94612	Jay Stockton, Area Manager	(510) 622-2286

8.12.8 Permits Required and Permit Schedule

Responsible Agency	Permit/Approval	Schedule
Colusa County Office of Environmental Services	Hazardous Material Business Plan	To be obtained before all hazardous materials have arrived on site.

Reliant will be responsible for completing a Risk Management Plan, as described by CalARP guidelines, and submitting it to the Certified Unified Program Agency (CUPA) or other designated agency for Colusa County and to the United States Environmental Protection Agency. Colusa County is currently a non-CUPA county but plans to become a CUPA county upon the state's acceptance of their application. Once Colusa County becomes a CUPA, a local agency will be selected to review the county's RMP submittals.

8.12.9 References

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Table 8.12-1
Anticipated Hazardous Materials Used at the Operational Colusa Power Plant
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Material	Label on Figure 8.12-1	CAS Number	Location/ Application	Hazardous Characteristics[a]	Maximum Quantity On Site	Regulatory Thresholds (lbs)			
						Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Hydrogen	A	1333-74-0	Generator Cooling	Acute, fire, pressure, reactive	24,000 scf		-	-	10,000
Sulfuric Acid 29.5 wt%	B	7664-93-9	Station and Gas Turbine Batteries	Acute, chronic, reactive	1,500 US gal	1,000	1,000	1,000	-
Carbon Dioxide gas	C	124-38-9	Generator Purging	Acute, chronic, pressure	25,200 scf	-	-	-	-
Carbon Dioxide liquid	D	124-38-9	Fire Suppression	Acute, chronic, pressure	25,000 lbs	-	-	-	-
Nitrogen gas	E	7727-37-9	Blanketing	Pressure	200 lbs	-	-	-	-
Propylene Glycol (Antifreeze)	F	57-55-6	Closed Cooling Water System	Acute, chronic, fire	25 US gal	-	-	-	-
Alkaline Phosphate Solution (Scale Inhibitor) e.g., Trisodium Phosphate[f]	G	7601-54-9	Boiler Feedwater Scale Control	Acute, chronic	5 × 55 US gal Containers 30 days storage[b]	-	[5,000]	-	-
Aqueous Ammonia 29.4 wt%	H	7664-41-7	NO_X Emissions Control	Acute, chronic, fire, pressure	20,000 US gal	500	100	500	20,000
Mineral Insulating Oil	I	None	Electrical Transformers	Acute, chronic, fire	55,000 US gal[c]	-	-	-	-
Lubricating Oil	J	None	Mechanical Equipment	Acute, chronic, fire	12,400 US gal[c]	-	-	-	-
Hydrochloric Acid[d]	Stored off site	7647-01-0	HRSG Chemical Cleaning	Acute, chronic	Temporary Only[e]	-	5,000	-	15,000

Table 8.12-1
Anticipated Hazardous Materials Used at the Operational Colusa Power Plant
(Page 2 of 2)

Material	Label on Figure 8.12-1	CAS Number	Location/ Application	Hazardous Characteristics[a]	Maximum Quantity On Site	Regulatory Thresholds (lbs)			
						Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Ammonium Bifluoride	Stored off site	1341-49-7	HRSG Chemical Cleaning	Acute, chronic	Temporary Only[e]	-	100	-	-
Citric Acid	Stored off site	77-92-9	HRSG Chemical Cleaning	Acute, chronic	Temporary Only[e]	-	-	-	-
EDTA Chelant	Stored off site	62-33-99	HRSG Chemical Cleaning	Acute	Temporary Only[e]	-	100	-	-
Sodium Nitrate	Stored off site	7632-00-0	HRSG Chemical Cleaning	Acute	Temporary Only[e]	-	-	-	-
Diesel Fuel Oil	K	68476-34-6	Diesel Firewater Pump Motor	Acute, chronic, fire	280 US gal	-	-	-	-
Natural Gas	L	None	Gas Turbine Generator and Duct Burner Fuel	Acute, fire, pressure	1,300 lbs Temporary	-	-	-	-

Cal-ARP = California Accidental Release Prevention Program
CAS Number = Chemical Abstract Services
Federal RQ = Reportable Quantity
Federal TPQ = Threshold Planning Quantity
Federal TQ = Threshold Quantity

lbs = pounds
scf = standard cubic feet
US gal = US gallons

Notes:

All quantities are approximate.
Demineralizer regeneration chemicals for makeup water are not included – plant will use demineralizer trailers, which are regenerated off site.
[a] Hazard categories are defined by 40 CFR 370.2. Health hazards include acute (immediate) and chronic (delayed). Physical categories include fires, sudden release of pressure, and reactive.
[b] Chemicals are pre-mixed in portable containers.
[c] In the equipment and pipelines.
[d] Hydrochloric Acid assumed to be aqueous with a concentration greater than 27%.
[e] Gas turbine water wash cleaning chemicals are not stored on site, cleaning is by a contractor.
[f] Trisodium Phosphate is one possible alkaline phosphate solution that may be used at CPP.

Table 8.12-2
Dispersion Model Parameters

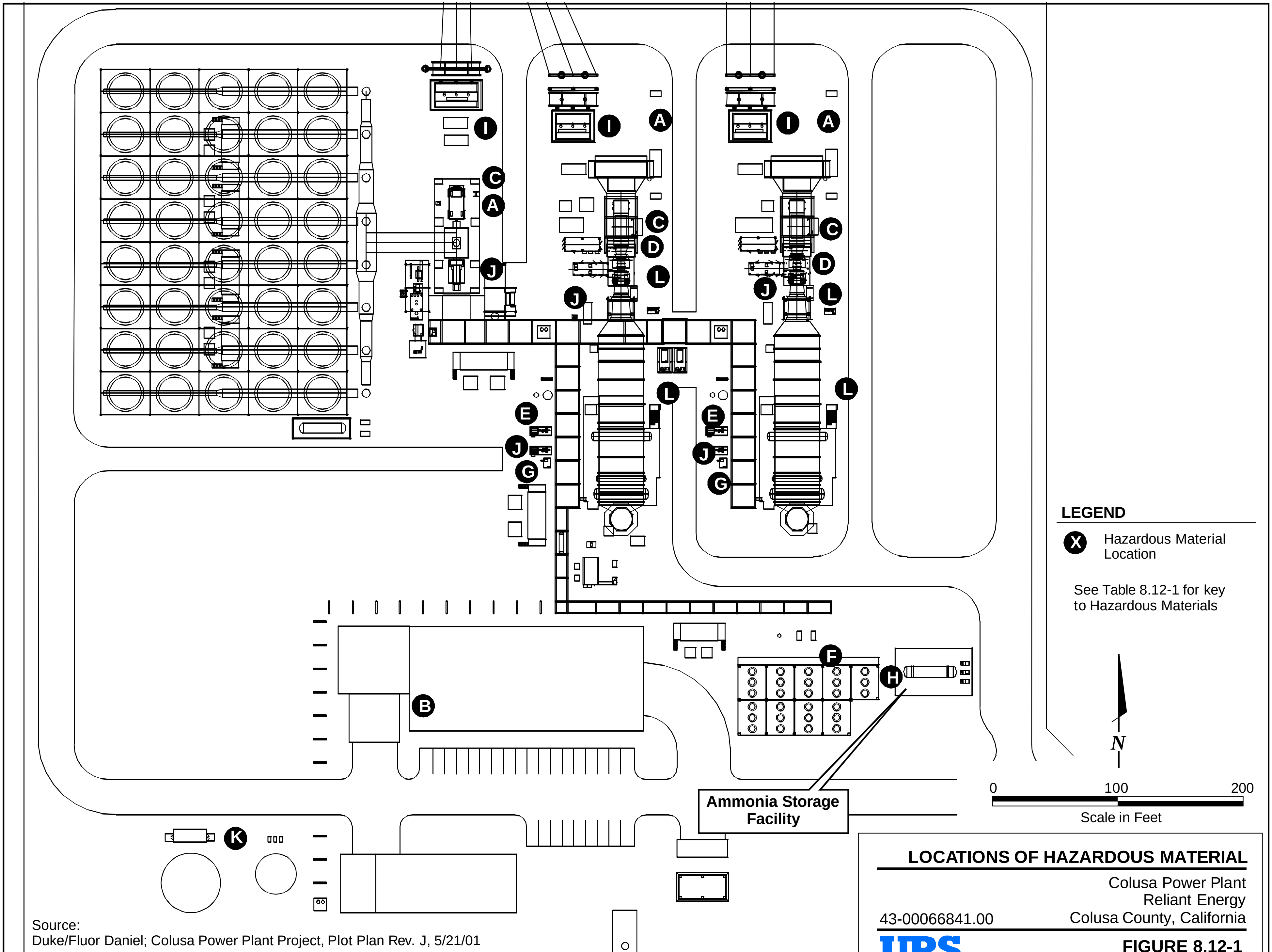
Parameter	Worst-Case Scenario	Alternative Scenario
Ambient Temperature (°F)	111	60.5
Aqueous Ammonia Release Temperature (°F)	120	69.5
Atmospheric Stability Class[a]	F	D
Wind Speed (meters per second)	1.5	3.0
Ammonia Gas Release Area (square feet)	1,125	565.0

Note:

[a] Atmospheric Stability Class D = Neutral
Atmospheric Stability Class F = Stable

Table 8.12-3
Applicable Hazardous Materials Handling Laws, Ordinances, Regulations and Standards

Laws, Ordinances, Regulations, and Standards	Administering Agency	Applicability	AFC Section
Federal			
CERCLA/SARA 40CFR Part 68.115, part F	U.S. EPA	Reporting requirements for storage, handling, or production of significant quantities of hazardous or acutely hazardous materials.	Section 8.12.2
29 CFR Sections 1910 and 1926	U.S. EPA, Cal-OSHA	Protect workers by meeting the requirements for equipment to store and handle hazardous materials.	Section 8.12
State			
California Health & Safety Code 25531-25543.3; Cal-ARP 2735-2785; CAA Section 112(r)	State Department of Toxic Substances Control, State Regulatory Programs Division	Preparation of a Risk Management Plan for regulated substances onsite and a Hazardous Materials Plan.	Section 8.12
Local			
California Code of Regulations Title 8 section 5189	Colusa County Environmental Health; Colusa County Dept. of Emergency Services	Develop and implement safety management plans and risk management plans.	Section 8.12
Uniform Fire Code Article 79 & 80	Maxwell Volunteer Fire Department (MVFD) 231 Oak Street Maxwell, CA 95955	Requires secondary containment, monitoring and treatment for accidental releases of toxic gases.	Section 8.12.4



Source:
Duke/Fluor Daniel; Colusa Power Plant Project, Plot Plan Rev. J, 5/21/01

LOCATIONS OF HAZARDOUS MATERIAL

Colusa Power Plant
Reliant Energy
Colusa County, California

43-00066841.00

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FIGURE 8.12-1

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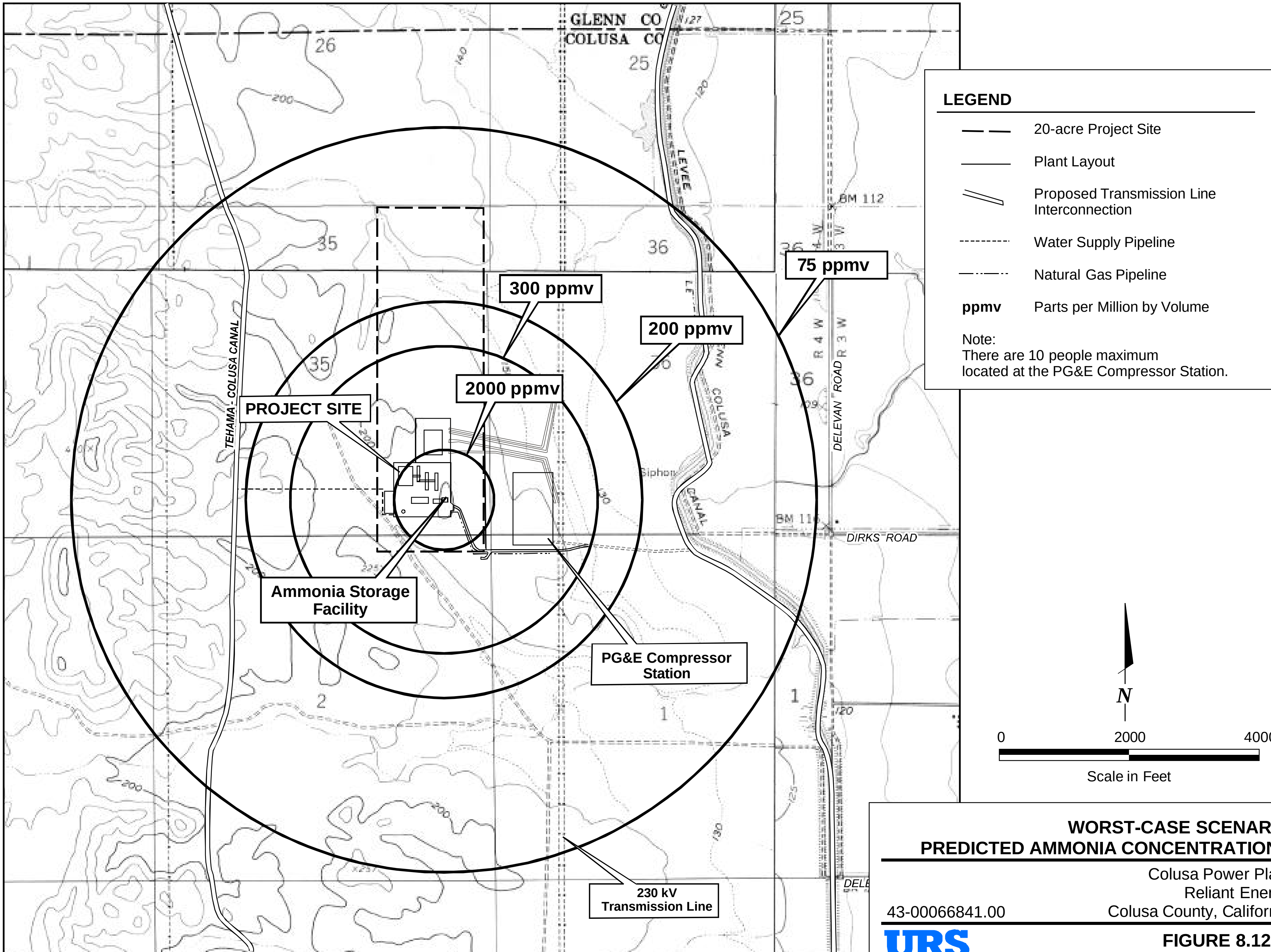

WORST-CASE SCENARIO
PREDICTED AMMONIA CONCENTRATIONS

Colusa Power Plant
Reliant Energy
Colusa County, California

43-00066841.00

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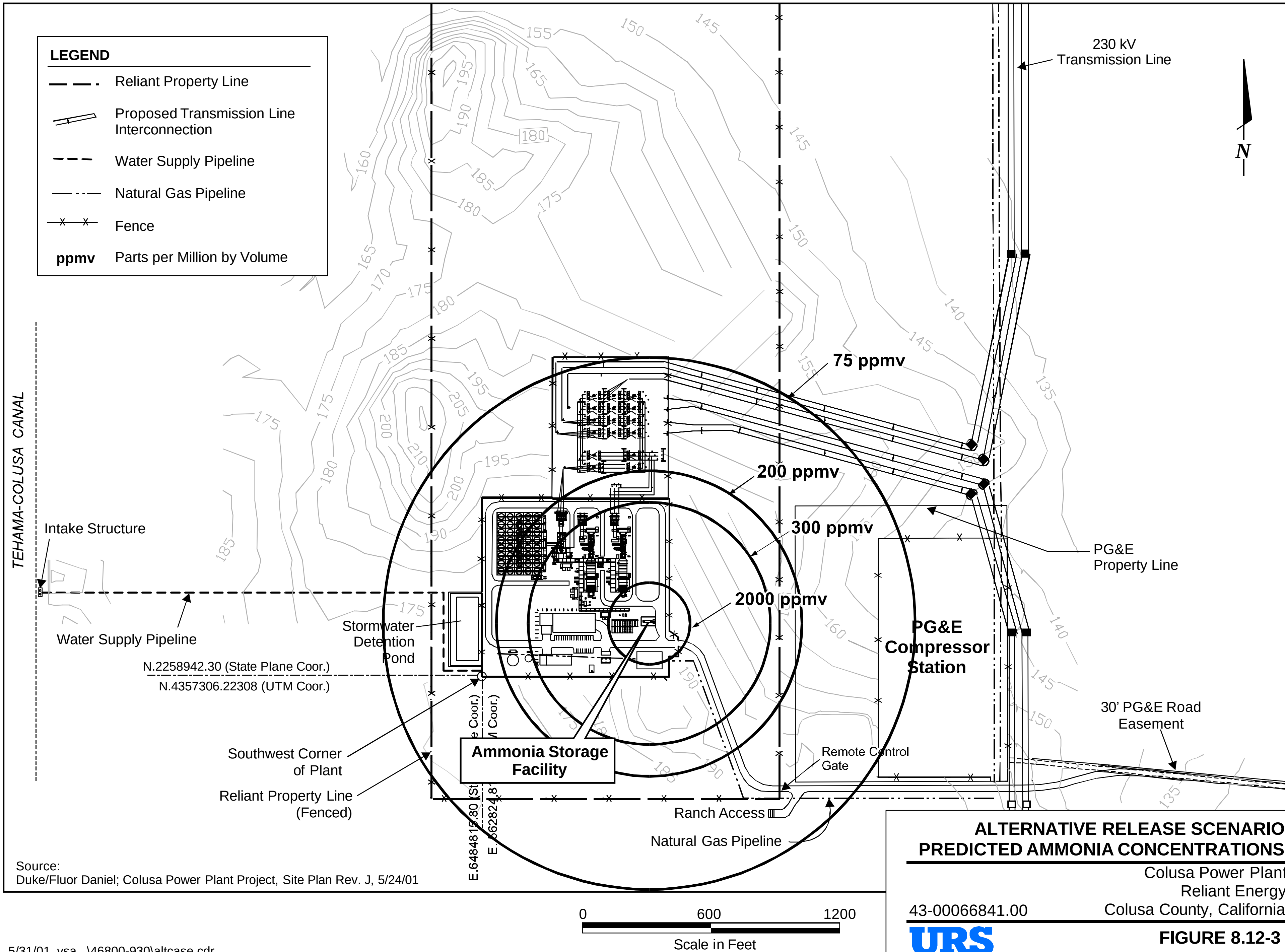
FIGURE 8.12-2

5/31/01 vsa ..\46800-930\wrstcase.cdr



ALTERNATIVE RELEASE SCENARIO PREDICTED AMMONIA CONCENTRATIONS

Colusa Power Plant
Reliant Energy
Colusa County, California

43-00066841.00

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FIGURE 8.12-3

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